

WHAT IS CLAIMED IS:

1. An electronics assembly comprising:
at least one electronics element, said at least one element having at least one circuit
5 disposed thereon; and
a structure adapted to receive said at least one electronics element and retain said at least
one element in a substantially fixed position;
said structure further comprising at least one backplane element adapted to electrically
communicate with said at least one electronics element, said backplane element having a
10 plurality of ports for electrically communication with other electronic devices;
wherein said assembly is further adapted to accommodate a varying number of said
electronics elements and respective ones of said backplane elements according to the
configuration desired by the user.
2. The assembly of Claim 1, wherein said plurality of ports comprises at least one
15 pigtail connector.
3. The assembly of Claim 1, wherein said one electronics element comprises a
substrate having at least one circuit disposed nonlinearly on opposing sides.
4. The assembly of Claim 1, wherein said assembly is used in a DSL system, and
said backplane element comprises:
20 a first port adapted to interface electrically with a POTS entity; and
a second port adapted to electrically interface with a DSLAM.
5. The assembly of Claim 1, wherein said one electronics element is configured to
substantially separate a plurality of electrical circuits disposed thereon.
6. The assembly of Claim 1, wherein said at least one circuit comprises one or
25 more DSL splitter circuits.
7. An electronic insert element, comprising:
a substrate having a plurality of traces; and
a plurality of electronic components, said components adapted for mounting on said
substrate, respective ones of said components forming substantially individual circuits
30 disposed in generally linear fashion on said substrate.

8. The insert element of Claim 8, further comprising a plurality of edge terminals disposed proximate at least one edge of said substrate, said terminals adapted for electrical interconnection with a corresponding connector.
9. The insert element of Claim 8, further comprising ground traces routed
5 between at least a portion of said circuits.
10. The insert element of Claim 8, wherein said components are mounted opposing sides of said substrate.
11. The insert element of Claim 10, wherein components associated with said circuits on the first side of said substrate are disposed in staggered fashion relative to the
10 components of circuits disposed on the second side of said substrate.
12. The insert element of Claim 8, wherein conductive traces proximate said edge terminals are adapted for routing such that individual ones of said circuits may utilizes ones of said edge terminals not immediately proximate thereto.
13. The insert element of Claim 8, further comprising a plurality of capacitance-
15 producing elements adapted to substantially cancel cross-talk associated with said circuits.
14. A structure for use with an electronics assembly, comprising:
at least one electronics element, said at least one element having at least one circuit disposed thereon;
at least one multi-terminal connector; and
20 an edge connector adapted to mate with said electronics element; said edge connector further adapted for removal of said electronics element the substrate without causing interruption in said circuit.
15. A backplane element, comprising:
a first multi-terminal connector disposed substantially juxtaposed to a second multi-
25 terminal connector;
a connector cable, said cable electrically mated to a pigtail connector;
a third multi-terminal connector adapted to interface with terminals of an electronics insert element associated with said backplane element; and
an interface element disposed electrically between said third connector and said first,
30 second, and pigtail connectors.
16. The backplane element of Claim 15, wherein:

said first multi-terminal connector is adapted for use as a plain old telephone system (POTS) signal interface;

said second multi-terminal connectors is adapted for use as an outside plant interface; and

5 said pigtail connector is adapted to provide electrical communication with a DSL access multiplexer (DSLAM).

17. The backplane element of Claim 15, further comprising a plurality of capacitive elements disposed proximate said backplane element, said capacitive elements adapted to provide the high-pass filter functionality.

10 18. The backplane element of Claim 17, wherein said interface element comprises a substantially flexible substrate having a plurality of electrical traces formed thereon.

19. A backplane assembly, comprising:

a first electrical connector;

a first substrate adapted to receive at least part of said first connector;

15 a plurality of second electrical connectors;

a second substrate adapted to receive at least a portion of each of said second connectors;

structure components maintaining said first and second substrates in substantially fixed relationship; and

20 an electrical interface disposed substantially between said first and second substrates; wherein said electrical interface provides electrical connection between said first connector and at least a portion of said second connectors.

20. The backplane assembly of Claim 19, wherein said electrical interface comprises a flexible substrate having conductive traces disposed along its surfaces and propagating between corresponding termination points for said first and second substrates.

25 21. An electronics element adapted for use in a plurality of different housing configurations, comprising:

a substrate having a plurality of signal conditioning circuits, said circuits disposed in a substantially aligned orientation on at least one surface of said substrate, said alignment adapted to permit separation of said substrate into a plurality of individual substrates;

30

wherein said element or said individual substrates are adapted for use in various housing structure configurations.

22. The element of Claim 21, wherein said electronics element further comprises a plurality of edge terminals adapted to interface with said substrate and said circuits, said edge terminals being associated with respective ones of said circuits and for separation.

23. A high-density electronics assembly housing structure, comprising:
a housing;
a face plate removably coupled to said housing;
a back plate adapted to mate to said housing, said back plate comprising a plurality of apertures; and

a plurality of guide elements adapted to receive and guide electronics insert elements, said guide elements adapted to frictionally engage the substrate of the insert elements;
wherein said guide elements are disposed in substantially proximate locations to facilitate high-density storage of a plurality of said insert elements; and
wherein said housing is adapted to receive a plurality of electrical backplane elements associated with respective ones of said insert elements.

24. The structure of Claim 23, wherein said guide elements comprise raised element pairs.

25. The structure of claim 23, wherein said guide elements comprise a plurality of raised dowels arranged in an array.

26. The structure of claim 23, wherein said guide elements comprise a plurality of depressed elongated slots formed into side walls of said structure.

27. The structure of claim 23, wherein said guide elements comprise a plurality of mechanical fasteners.

28. The structure of Claim 23, wherein said structure is further adapted to mate with parent device.

29. A method of configuring a user-configurable electronics assembly having a housing adapted to receive a plurality of insert elements, said insert elements each having at least one circuit disposed thereon and a plurality of edge terminals;
selecting the number of insert elements to be used in said assembly;

providing one multi-connector backplane element for each of said selected inserts,
said backplane element(s) having a corresponding edge connector;

mating said backplane element(s) to a rear face of said housing; and

disposing said insert element(s) within said housing, said edge terminals mating with
5 said edge connector.

30. A method of reducing the cross-talk associated with a plurality of DSL circuits
disposed on a common substrate, comprising providing a plurality of capacitances between
selected ones of the tip and ring traces of said circuits, said capacitances being adapted to
counteract the effects of cross-talk capacitance created between ones of said tip and ring
10 traces during operation of said circuits.

31. A user-configurable electronics assembly comprising:

a plurality of electronics elements, said at least one assembly having at least one circuit
disposed thereon; and

a modular structure having a plurality of separable components, each of said separable
15 components adapted to receive at least one of said electronics elements and retain said at least
one element in a substantially fixed position;

said components each further comprising at least one backplane element adapted to
electrically communicate with said at least one electronics element, said backplane element
having a plurality of ports for electrically communication with other electronic devices;

20 wherein said assembly is further adapted to accommodate a varying number of different
configurations of said separable components and said elements disposed therein according to
the configuration desired by the user.